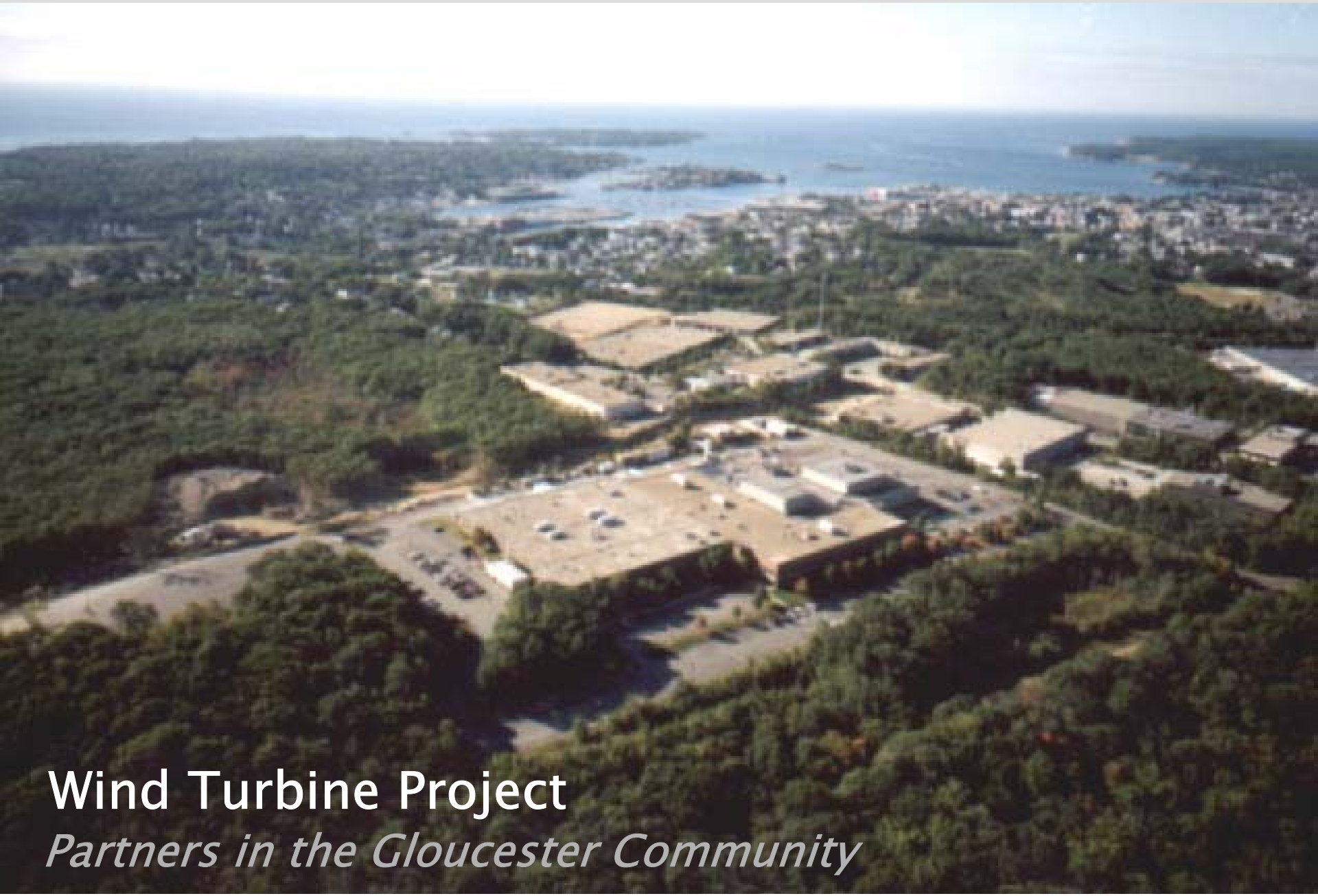

Wind Turbine Project

Partners in the Gloucester Community

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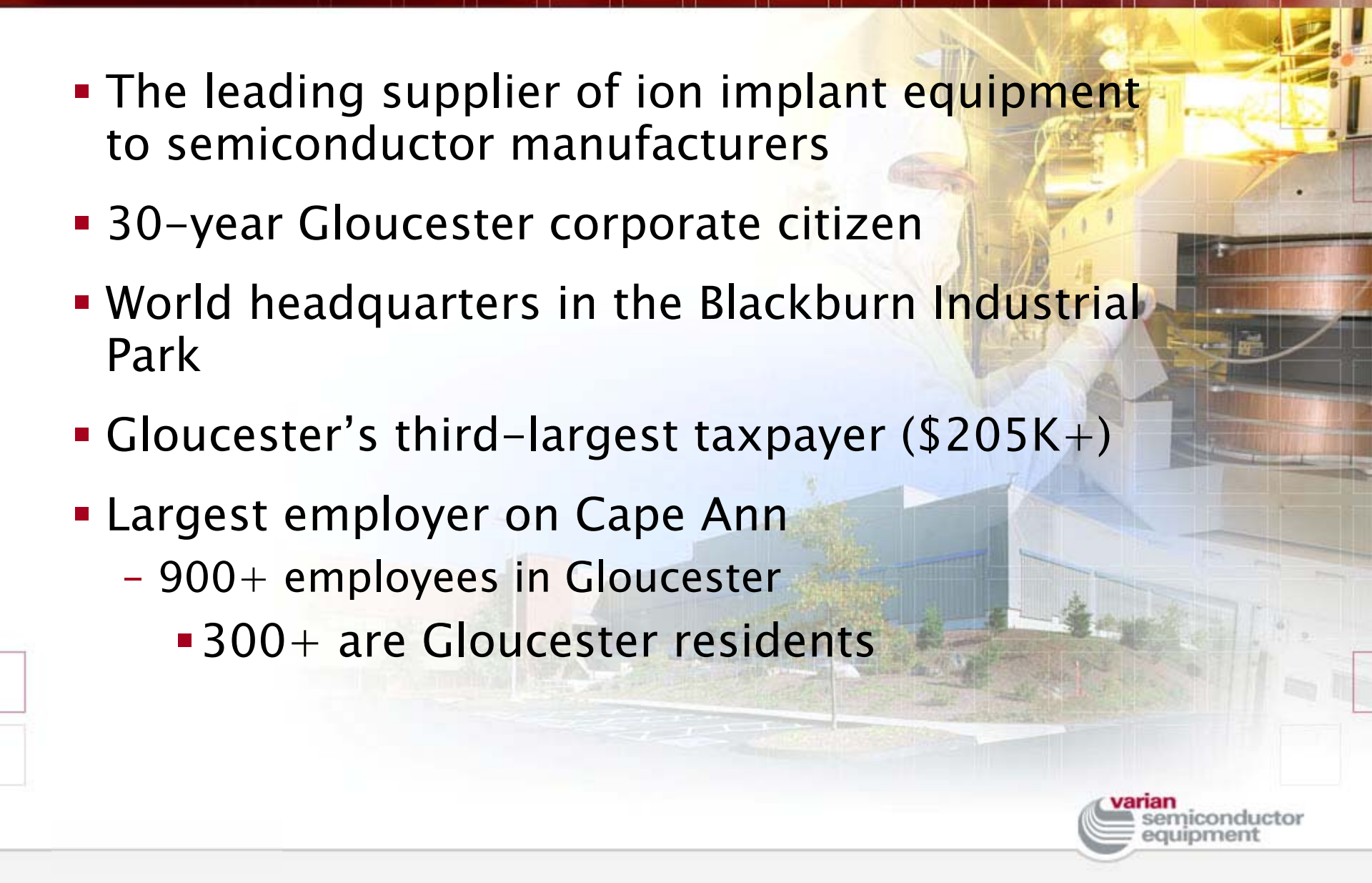
Varian Semiconductor
Who We Are



- The leading supplier of ion implant equipment to semiconductor manufacturers
- 30-year Gloucester corporate citizen
- World headquarters in the Blackburn Industrial Park
- Gloucester's third-largest taxpayer ($205K+)
- Largest employer on Cape Ann
  - 900+ employees in Gloucester
    - 300+ are Gloucester residents

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Varian Semiconductor
Goal – Contain Energy Costs

- 21,500,000 kWh average annual consumption
- $2,100,000 average annual cost
- Electricity accounts for ~ 10% of operating budget

Varian Semiconductor
Energy Conservation Measures to Date

- Converted plant AC systems to variable air volume
- Added variable speed drives to motors
- Replaced aging air compressors with energy efficient compressors
- Use airside economizer on all AC systems
- Added waterside economizer for plant chilled water
- Installed flow control devices to plant process chilled water system
- Use high efficiency insulation on new and replaced roofs
- Installed high efficiency lighting and lighting controls

Varian Semiconductor
Why Wind?

- Superb wind resources – 6.9 m/s (15.4 mph) average anemometer measurements @ 54 meters (177 ft)
- More than adequate electricity consumption
- Consistent load profile (24/7 operation)
- Behind the meter (primary metering)
- Sufficient area to place turbines (23 acre parcel)
- Sufficient buffer from residential areas (1/4 mile +)

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Wind Turbine Project

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Wind Turbines
Massachusetts – Operating and Planned

Operating

- Hull 1 – 660 kW
- Hull 2 – 1.8 MW
- IBEW – 100 kW
- Mass. Maritime – 660 kW
- Princeton – 330 kW
- Holyoke (UMass) – 250 kW

Planned

- Varian – 3.0–5.0 MW
- Princeton – 3.0 MW
- Monroe – 30.0 MW
- Savoy – 12.5 MW
- Hancock – 15.0 MW
- Cape Wind – 420 MW
- Jiminy Peak – 1.5 MW
- Orleans – 3.3 MW
- Hull Offshore – 6.0–12.0 MW

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Proposed Wind Turbines
Background

- Two (2) ~262-280 foot tall steel towers (80-85 meters)
- Height at vertically aligned blade will be ~426 feet (85m tower with 90m rotor)
- Blades make 1 revolution in ~3 seconds (18-20 rpm)
- The wind turbines can produce enough power for as many as 2,200 homes (@ 6,000 kWh/yr) for one year
- Wind power is a clean, renewable resource that does not produce pollution or greenhouse gases
- Both U.S. (GE/Clipper) and European (EU/Fuhrlander) manufacturers will be considered
- Installation is anticipated to begin Summer 2007, completion Fall 07-Fall 09 (depending on turbine availability)

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Wind Power
Benefits both Varian and Gloucester Community

Varian Semiconductor

- Turbines can supply ~50% of Varian's electricity use, reducing amount of electricity supplied from the grid
- Increased supply of clean wind power will displace existing fossil fuel-based electricity generation from the grid
- Varian can continue to thrive as a cost-competitive large employer in Gloucester

Gloucester Community

- The City of Gloucester can continue to reap the economic benefits from and support of Varian as an employer, taxpayer and good corporate citizen
- The operation of the wind turbines will reduce the amount of power that has to flow from the utility sub-station to the Blackburn Industrial Park which can improve the voltage profile on the distribution circuit
- Improves regional air quality by reducing greenhouse gases (5.6 tons/yr), nitrous (0.35 tons/yr) and sulfur oxides and particulates (9 tons/yr)

Varian hopes to carry on Gloucester's tradition of harnessing the wind for the benefit of the Company and the Gloucester community.

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Aerial View
Varian 35 Dory Road Property

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Wind Turbines
Visual , Sound and Environment Impact

- Visual Impact Assessment Locations
  - Crestview Terrace Neighborhood
  - Blackburn Circle
  - Good Harbor Beach
  - Stage Fort Park
  - Rocky Neck
  - Varian Front Entrance

- Sound Impact
  - Overview
  - Sound Level Impact Assessment Report – Results
- Environment Impact
  - Fisheries and Wildlife

Crestview Terrace Neighborhood
Visual Impact – Proposed

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Blackburn Circle
Visual Impact – Proposed

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Good Harbor Beach
Visual Impact – Proposed

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Stage Fort Park
Visual Impact – Proposed

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Rocky Neck
Visual Impact – Proposed

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Sound Impact
Overview

- Dominant sound nearby (on-site) is the slow, white-noise whooshing sound of the blades cutting through the air
- This sound is on par with ambient noise, i.e., passing cars, birds singing, leaves blowing, wind itself, etc.

During visits to the Hull, MA and Atlantic City, NJ wind turbine projects, the blade and machinery sounds were very quiet and normal conversation could be held at the base of the wind turbines

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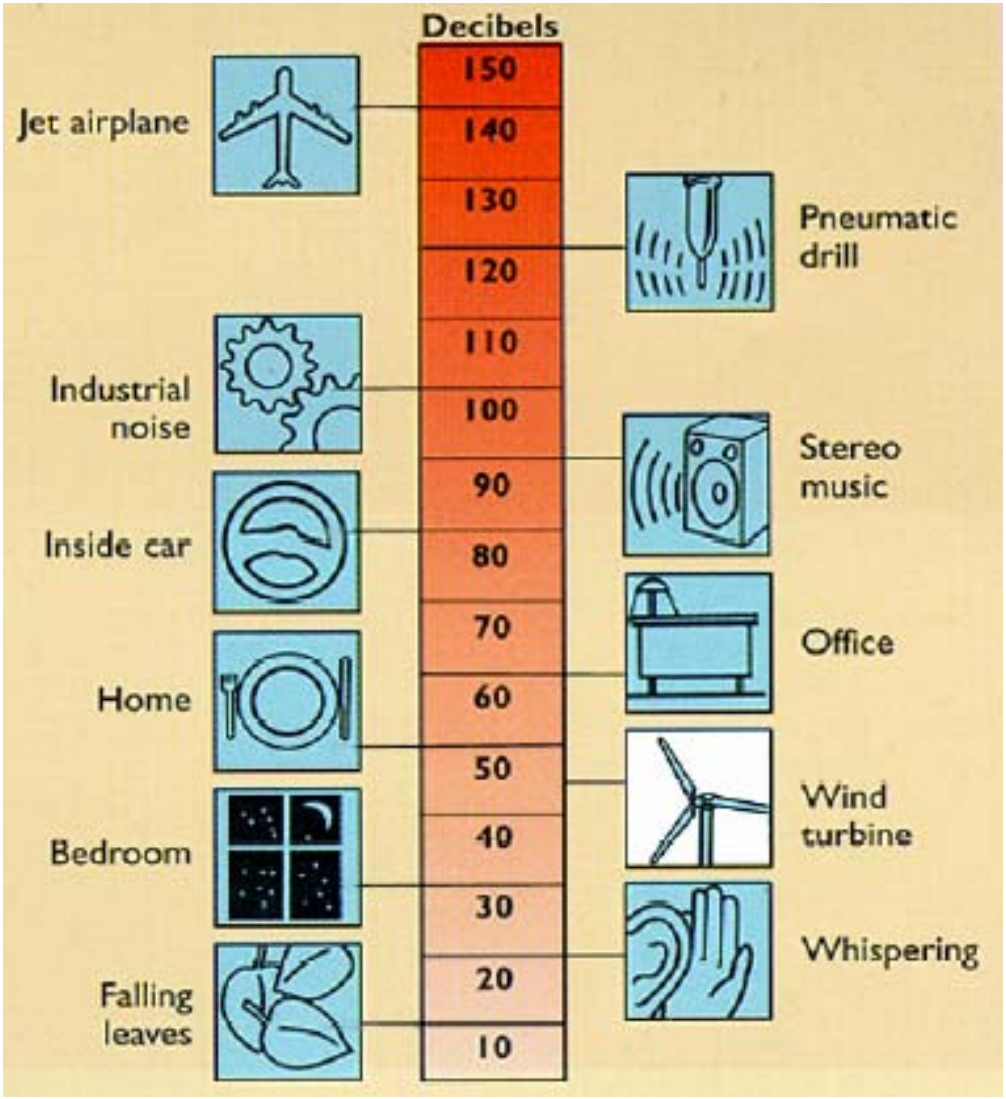
Common Indoor and Outdoor Sounds
Compared to a Wind Turbine



Sound Impact
Noise Monitoring Locations

Comparison of Future Predicted Nighttime Sounds with Existing Background – *MA DEP Criteria*

Location	Lowest Existing L90 – Nighttime (dBA)	Future L90 – Project (dBA)	Future L90 – Nighttime Total (dBA)	Increase (dBA)
Fuller Middle School	39	30	39	<1
Varian Parking Lot	41	52	52	11*
Southwest Side of Main Varian Bldg.	42	48	49	7
Northern End of Harrison Avenue	43	40	45	2
Cul-de-sac off Eastern Ave	38	<30	38	<1

Notes: Per MA DEP Noise Policy this project cannot exceed an additional 10 dBA at Varian property line (*DAQC policy 90-001*). * Located on site property; MA DEP criteria not applicable.

Wind turbine sound will be lower than existing background levels at residential locations, i.e., sound will not be heard by closest residences

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Sound Level Impact Assessment

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Environment Impact

U.S. Fish and Wildlife and MA Natural Heritage and Endangered Species Program

- No Federal or State listed rare plants or animals, or threatened/endangered species have been identified in the project area
  - MA Division of Fisheries and Wildlife letter (May 9, 2005)
  - U.S. Department of the Interior Fish and Wildlife Service letter (May 12, 2005)

Based on a study of 12 wind turbine projects outside of California, the fatality rate of birds averages 2.3 per turbine per year and 3.1 per megawatt per year of capacity in the U.S.*

* Second Edition Fact Sheet of the National Wind Coordinating Committee – Wind Turbine Interactions with Birds and Bats: A Summary of Research Results and Remaining Questions

Project Savings

- Avoided purchase of generated electricity
- Avoided transmission costs, peak rates, tariff, etc.
- Sale of excess generation back to grid
- Sale of renewable energy certificates (REC's)
- Less Operating costs

Expected return on investment 6.0 years

Permitting *Required*

- Gloucester EDIC
  - Board approval
- Gloucester Conservation Commission
  - Request for Determination of Applicability (work within the 100 ft. buffer zone of a wetland)
  - Work with “watershed constable”
- Gloucester Zoning Board of Appeals
  - Variance required for fall zone area
  - Special permit required for Wind Energy Conversion Device
- Gloucester City Council
  - Special exception for height
- Gloucester Planning Board
  - Special permit for Watershed Overlay Protection District

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Aerial View
Varian 35 Dory Road Property

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Permitting
State, Federal, Other

- **Massachusetts Historical Commission**
  - A determination of no adverse effect on any property listed in the state register of historic places
- **Massachusetts Environmental Policy Act Review (MEPA)**
  - This project not subject to review under MEPA, therefore the filing of an Environmental Notification Form is not required
- **State of Massachusetts**
  - General application for storm water control during construction
  - Road transport permits (i.e. wide load)
- **Federal Aviation Administration** (notice of proposed construction or alteration)
  - Determination of no hazard to aviation
  - Marking and lighting specifications
- **Federal Energy and Regulatory Commission (FERC)**
  - Qualifying Facility Status as a small power production facility
- **Interconnection Impact Study (NGrid)**
  - No adverse impact on transmission system
  - No adverse impact on the distribution system
- **Avian Impact**
  - Bird & Bat Studies
  - Migratory Study
- **Radio & Microwave Path Clearance**
  - AM/FM, Land/Mobile Radio, Communication Towers within 15 miles
  - U.S. Department of Commerce Notification
- **Letters of Support**
  - Office of the Mayor, EDIC, Chamber of Commerce, Cape Ann Climate Change Network

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Hull Wind 2 – Turbine Delivery Part 1

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Hull Wind 2 – Turbine Delivery Part 2

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Q&A

- **How would the installation of wind turbines affect property values for us and our neighbors?**

  In a study* funded by the US Government, property values near wind power installations rose faster than comparable areas. The Renewable Energy Policy Project analyzed ten projects within the wind power view shed, three years before installation of wind turbines and three years after. Property values, with respect to a comparable region, actually rose more quickly in the wind turbine view shed areas. Moreover, values increased faster in the view shed areas after the projects came on line than they did before. After viewing the wind turbines in Hull, MA and Atlantic City, NJ and speaking with some of the residents, many people feel the turbines are majestic – a positive symbol for the future.

  * Renewable Energy Policy Project – The Effect of Wind Development on Local Property Values, Analytical Report – May 2003

Q&A

- **How noisy are these wind turbines? Will they be annoying to our neighbors?**

  Wind turbine noise can originate from two different sources; mechanical generator equipment and aerodynamic motion of the rotor blades.

  Visits to two recently installed wind turbine projects in Hull, MA and Atlantic City, NJ, show that most of the observed noise is from motion of the rotor blades. The blades make one revolution in approximately 3 seconds. According to the American Wind Energy Association “an operating wind farm at a distance of 750 to 1,000 feet is no noisier than a kitchen refrigerator or a moderately quiet room”. You will find that you can stand directly beneath a wind turbine and have a normal conversation without raising your voice.

Q&A

- **Is it true that blades cause dangerous ice throws?**

  Ice throw can occur under certain conditions, but is of little danger. Setbacks typically used to minimize noise are sufficient to protect danger to the public. Also, ice buildup slows a turbine's rotation and will be sensed by the turbine's control system, causing the turbine to shut down. In addition, today's wind turbines have an option (which Varian will be purchasing) to come equipped with a "cold weather package" to prevent icing.

Wind Turbine Benefits

- Economy
  - Varian is in a very competitive market where overhead is a factor. We compete against companies in the U.S. and Asia that have much lower operating costs. The availability of inexpensive wind power will enable Varian to be more competitive. In this way, the City of Gloucester can continue to reap the economic benefits and support of Varian (the largest employer and third highest taxpayer in the City).
- Environment
  - Electricity generated from wind displaces electricity that would otherwise be generated by fossil fuels, which improves regional air quality by avoiding emissions of pollutants.
- Local Power Quality
  - The operation of the wind turbines will reduce the amount of power that has to flow from the utility sub-station to the Blackburn Industrial Park which can improve the voltage profile on the distribution circuit.
- Education
  - Varian is willing to develop local educational partnerships to teach students, the general public and the business community about renewable energy.

Thank you for your interest




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